

CLAIMS

1. A method for concurrently accessing network-based electronic content in a Voice Browser and a Visual Browser comprising the steps of:
- retrieving a network-based document formatted for display in the Visual Browser;
 - identifying in the retrieved document a reference to the Voice Browser, said reference specifying electronic content formatted for audible presentation in the Voice Browser; and,
 - transmitting said reference to the Voice Browser;
 - the Voice Browser retrieving said specified electronic content and audibly presenting said electronic content in the Voice Browser;
 - the Visual Browser visually presenting said network-based document concurrently with said audible presentation.
2. The method according to claim 1, wherein said network-based document formatted for visual presentation in the Visual Browser is an HTML formatted document and the Visual Browser is a Web Browser.
3. The method according to claim 1, wherein said electronic content formatted for audible presentation in the Voice Browser is VoiceXML formatted electronic content.
4. The method according to claim 2, wherein said reference is a coordination markup attribute.
5. The method according to claim 1, wherein said reference specifies a network-based document containing said electronic content formatted for audible presentation in the Voice Browser,
- whereby the Voice Browser can retrieve said specified network-based document through the computer communications network and audibly present said electronic

content contained in said specified network-based document, while the Visual Browser can visually present said network-based document formatted for visual presentation.

6. A method for concurrently accessing network-based electronic content in a Voice Browser and a Visual Browser comprising:

retrieving a network-based document formatted for audible presentation in the Voice Browser;

identifying in the retrieved document a reference to the Visual Browser, said reference specifying electronic content formatted for visual presentation in the Visual Browser; and,

transmitting said reference to the Visual Browser;

the Visual Browser retrieving said specified electronic content and visually presenting said electronic content in the Visual Browser;

the Voice Browser audibly presenting said network-based document concurrently with said visual presentation.

7. The method according to claim 6, wherein said network-based document formatted for audible presentation in the Voice Browser is a VoiceXML document.

8. The method according to claim 6, wherein said electronic content formatted for visual presentation in the Visual Browser is HTML formatted electronic content and the Visual Browser is a Web Browser.

9. The method according to claim 6, wherein said reference specifies a network-based document containing said electronic content formatted for visual presentation in the Visual Browser,

whereby the Visual Browser can retrieve said specified network-based document through the computer communications network and visually present said electronic

6 content contained in said network-based document, while the Voice Browser can
7 audibly present said network-based document formatted for audible presentation.

1 10. A machine readable storage, having stored thereon a computer program for
2 concurrently accessing network-based electronic content in a Visual Browser and a
3 Voice Browser, said computer program having a plurality of code sections executable
4 by a machine for causing the machine to perform the steps of:

5 retrieving a network-based document formatted for display in the Visual Browser;
6 identifying in the retrieved document a reference to the Voice Browser, said
7 reference specifying electronic content formatted for audible presentation in the Voice
8 Browser; and,

9 transmitting said reference to the Voice Browser;
10 the Voice Browser retrieving said specified electronic content and audibly
11 presenting said electronic content in the Voice Browser;

12 the Visual Browser visually presenting said network-based document
13 concurrently with said audible presentation.

1 11. The machine readable storage according to claim 10, wherein said network-
2 based document formatted for visual presentation in the Visual Browser is an HTML
3 document and the Visual Browser is a Web Browser.

1 12. The machine readable storage according to claim 10, wherein said electronic
2 content formatted for audible presentation in the Voice Browser is VoiceXML formatted
3 electronic content.

1 13. The machine readable storage according to claim 11, wherein said reference is a
2 coordination markup attribute.

1 14. The machine readable storage according to claim 10, wherein said reference
2 specifies a network-based document containing said electronic content formatted for
3 audible presentation in the Voice Browser,

4 whereby the Voice Browser can retrieve said specified network-based document
5 through the computer communications network and audibly present said electronic
6 content contained in said specified network-based document, while the Visual Browser
7 can visually present said network-based document formatted for visual presentation.

1 15. A machine readable storage, having stored thereon a computer program for
2 concurrently accessing network-based electronic content in a Visual Browser and a
3 Voice Browser, said computer program having a plurality of code sections executable
4 by a machine for causing the machine to perform the steps of:

5 retrieving a network-based document formatted for audible presentation in the
6 Voice Browser;

7 identifying in the retrieved document a reference to the Visual Browser, said
8 reference specifying electronic content formatted for visual presentation in the Visual
9 Browser; and,

10 transmitting said reference to the Visual Browser;

11 the Visual Browser retrieving said specified electronic content and visually
12 presenting said electronic content in the Visual Browser;

13 the Voice Browser audibly presenting said network-based document concurrently
14 with said visual presentation.

1 16. The machine readable storage according to claim 15, wherein said network-
2 based document formatted for audible presentation in the Voice Browser is a VoiceXML
3 document.

1 17. The machine readable storage according to claim 15, wherein said electronic

2 content formatted for visual presentation in the Visual Browser is HTML formatted
3 electronic content and the Visual Browser is a Web Browser.

1 18. The machine readable storage according to claim 15, wherein said reference
2 specifies a network-based document containing said electronic content formatted for
3 visual presentation in the Visual Browser,

4 whereby the Visual Browser can retrieve said specified network-based document
5 through the computer communications network and visually present said electronic
6 content contained in said specified network-based document, while the Voice Browser
7 can audibly present said network-based document formatted for audible presentation.

1 19. A multi-modal browser comprising:

2 a Visual Browser for visually presenting visual content retrieved from a computer
3 communications network;

4 a Voice Browser for audibly presenting voice content retrieved from said
5 computer communications network; and,

6 a Coupling Interface for synchronizing said visual and audible presentation of
7 said visual and voice content in each of said respective Visual and Voice Browsers.

1 20. The multi-modal browser of claim 19, wherein said visual content is HTML
2 formatted content and said voice content is VoiceXML formatted content.

1 21. The multi-modal browser of claim 19, further comprising:

2 a Time Critical Event Handler,

3 said Time Critical Event Handler listening for time critical content,

4 said Time Critical Event Handler identifying in said time critical content a content-
5 type indicator,

6 said Time Critical Event Handler forwarding said time critical content to said

Visual Browser if said content-type indicator indicates visual content,
said Time Critical Event Handler forwarding said time critical content to said
Voice Browser if said content-type indicator indicates voice content.

22. A method for modifying a network-based document for supporting concurrent
access to network-based voice and visual content in a Voice Browser and a Visual
Browser, comprising the steps of:

incorporating visual content in a network-based document;
formatting said network-based document for visual presentation in a Visual
Browser; and,
inserting at least one markup tag in said network-based document, said markup
tag containing a coordination markup attribute specifying a network-based document
formatted for audible presentation in a Voice Browser,

whereby the Visual Browser when rendering said network-based document
formatted for visual display can identify said coordination markup attribute in said
markup tag and can transmit a reference to said specified network-based document to
the Voice Browser causing the Voice Browser to retrieve said specified network-based
document and audibly present said specified network-based document concurrently
with the visual presentation of said network-based document formatted for visual
presentation in the Visual Browser.

23. The method according to claim 22, wherein said network based document
formatted for visual presentation in a Visual Browser is an HTML formatted document
and said Visual Browser is a Web Browser.

24. The method according to claim 22, wherein said network based document
formatted for audible presentation in a Voice Browser is a VoiceXML formatted
document and said Voice Browser is a VoiceXML Browser.

4 25. A method for modifying a network-based document for supporting concurrent
5 access to network-based voice and visual content in a Voice Browser and a Visual
6 Browser, comprising the steps of:

7 incorporating voice content in a network-based document;
8 formatting said network-based document for audible presentation in a Voice
9 Browser;
10 inserting at least one markup tag in said network-based document;
11 said markup tag containing a coordination markup attribute specifying a network-
12 based document formatted for visual presentation in a Visual Browser,
13 whereby the Voice Browser when rendering said network-based document
14 formatted for audible display can identify said coordination markup attribute in said
15 markup tag and can transmit a reference to said specified network-based document to
16 the Visual Browser causing the Visual Browser to retrieve said specified network-based
17 document and visually present said specified network-based document concurrently
18 with the audible presentation of said network-based document formatted for audible
19 presentation in the Voice Browser.

2 26. The method according to claim 25, wherein said network based document
3 formatted for visual presentation in a Visual Browser is an HTML formatted document
and said Visual Browser is a Web Browser.

1 27. The method according to claim 25, wherein said network based document
2 formatted for audible presentation in a Voice Browser is a VoiceXML formatted
3 document and said Voice Browser is a VoiceXML Browser.